

REMARKS

Upon entry of the present amendment, claims 1-15 will remain pending and stand ready for further action on the merits.

The amendments made herein to the claims do not incorporate new matter into the application as originally filed, with the amendment to claim 1 finding support at page 6, lines 21-22 of the specification. The amendment to claim 2 is made to simply change "micro pores" to "micropores" as recited in claim 1.

Accordingly, entry of the present amendment is respectfully requested, in that it raises no substantial new issues for the Examiner's consideration, and at the same time places the claims in a better format for consideration on appeal by the US Patent Office Board of Patent Appeals.

Claim Rejections Under 35 USC § 102/103

Claims 1-5 and 7-8 and 10 have been rejected under 35 USC § 102(b) as being anticipated by Yoshinaga et al. (EP 0843197 A2), as evidenced by NASA (Imagine the Universe! Dictionary). Further, claim 9 has been rejected under the provisions of 35 USC § 103(a) over Yoshinaga et al., in view of Hirai et al. (US 5,103,327), and claim 11 has been rejected under the provisions of 35 USC § 103(a) over Yoshinaga et al., in view of Tsubata et al. (US 5,762,825). Also claims 6 and 12-15 have been rejected under 35 USC § 103(a) as

being unpatentable over Larson (US 5,751,388) in view of Yoshinaga et al., as evidenced by NASA (Imagine the Universe! Dictionary). Reconsideration and withdrawal of each of these rejections are respectfully requested based upon the following considerations.

The Present Invention and Its Advantages

The present invention provides an anisotropic scattering film comprising a micro-porous film and a substance filled in micropores of said micro-porous film as recited in claim 1. The anisotropic scattering film has high transmittance and excellent scattering property.

Distinctions over the Cited Art

Yoshinaga et al. (EP 0843197 A2)

As to Yoshinaga et al., in the outstanding office action, the Examiner states, "the minor axis size of the ellipse is 0.1 to 10 microns (diameter of a shorter axis of the spheroid)... and would be smaller than the wavelengths of light greater than 0.1 to 10 microns which translate into 100 to 1000 nm", but this is incorrect. "0.1 to 10 microns" translates into "100 nm to 10,000 nm." Thus, Yoshinaga et al. teaches a very wide range of the minor axis size of 100 nm to 10,000 nm. However, Yoshinaga et al. does

not teach the minor axis size of the micropores in the concrete examples thereof at all.

In the present invention, the minor axis size of the micropores is smaller than a wavelength of light in a visible region. The anisotropic scattering film of the present invention is used without switching of applied voltage, and it is very important that "the minor axis size of the micropores is smaller than a wavelength of light", especially in order to realize high transmittance.

Next, there is noted the void fraction of the porous film. In the porous film of Yoshinaga et al., switching applied voltage controls transmission and scattering of incident light into the porous film. In the non-applied voltage state, the film is in a state of scattering, and transmission state of incident light is realized by applied voltage. Therefore, the porous film of Yoshinaga requires a porosity of 80 - 98% to contain a large amount of a low-molecular weight mesomorphic compound in the pores. Further, it is noted that the porous film of Yoshinaga is used by being disposed between a pair of electrode plates.

In contrast to Yoshinaga et al., the anisotropic scattering film of the present invention is used as it is without switching of applied voltage.

Accordingly, the film of the present invention is clearly different from the porous film of Yoshinaga et al. in its principle of operation, and it is clear that Yoshinaga et al. do not teach or suggest the specific minor axis size of the present invention.

Furthermore, differences between Yoshinaga et al. and the present invention are explained below.

In the present invention, a porous film having a void fraction (porosity) of 30-75% is used.

On the other hand, the porous film of Yoshinaga et al. needs a higher porosity of 80-98% because it requires ON-OFF of applied voltage in order to change the orientation of filling substances in the pores.

In the film of the present invention, micropores have ellipse form, and the minor axis size of the ellipse is less than the wavelength of light, and the major axis of the ellipse is equal to or more than the wavelength of light. Here, the wavelength of light usually means a wavelength in a visible light region, which is 400nm to 800nm. (See specification page 6, lines 7-17). More specifically, the minor axis size is less than 400nm, and major axis size is 400nm or more. This can obtain an anisotropic scattering film having high transmittance and excellent scattering property.

Yoshinaga et al. describes that: a diameter of the dispersed low-molecular weight mesomorphic compound may preferably be 0.1 - 10 microns (see page 4, lines 56-58); and the low-molecular weight mesomorphic compound is dispersed therein in any shapes including spheres or spheroids or further irregularly elongated shapes like bars (see page 4, lines 55-56). Yoshinaga et al. teaches that a broad range of pore diameter can be used and any shapes of pores can be used, but does not teach specifically the minor axis size of ellipse form less than the wavelength of light.

Larson (US 5,751,388)

Larson teaches a polarization-sensitive scattering element (PSSE) which has a uniaxial homogeneously-aligned PDLC (polymer dispersed liquid crystal) structure, by utilizing phase separation (column 6, lines 22-31). The film of Larson is clearly different from the light scattering film of the present invention, which uses a film having a void fraction of 30-75%. Moreover, Larson is completely silent about the amount of the dispersed droplets in the matrix film and the diameter.

Accordingly, the disclosure of Larson is incapable of supporting an obviousness rejection of the claims under the provisions of 35 USC § 103(a).

Hirai et al. (US 5,103,327)

The USPTO relies upon Hirai et al. to cure deficiencies in the cited Yoshinaga et al. reference with respect to rendering obvious claim 9. However, as indicated above, Yoshinaga et al. is quite distinct from the present invention, and as such it is submitted that relying upon the secondary reference of Hirai et al. does not cure the deficiencies of the Yoshinaga et al. reference. Further, even upon combining the two disclosures of Yoshinaga et al. and Hirai et al., one would in no way be motivated to arrive at the instant invention recited in claim 9.

Tsubata et al. (US 5,762,825)

With regard to claim 11, the Examiner has also relied upon the secondary reference of Tsubata et al. in combination with the primary reference of Yoshinaga et al. to support an obviousness rejection of the claims. However, as noted above, Yoshinaga et al. is quite distinct from the present invention as claimed, so that even upon combining the disclosure of the secondary cited reference of Tsubata et al., one of ordinary skill in the art would in no way be motivated to arrive at the instant invention of claim 11. Absent such motivation in the cited art, the Examiner's outstanding rejection cannot be sustained.

Additional Comments

No motivation is provided in any of the instantly cited art, which would allow one of ordinary skill in the art to arrive at the present invention as claimed. This is true whether one considers the references of Yoshinaga et al., NASA (Imagine the Universe! Dictionary), Hirai et al., Tsubata et al., or Larson, alone or in combination. Accordingly, it follows that the cited references of record completely fail to anticipate or render obvious the instant invention as claimed.

CONCLUSION

Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims 1-15 are allowed and patentable under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

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overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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By 

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